ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY	PE NUMBER AND TITLE
3 - Advanced technology development	**0603004A - Weapons and Munitions Advanced Technology**

	COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
	Total Program Element (PE) Cost	52305	83337	74927	80632	77033	90524	90088	98748
232	ADVANCED MUNITIONS DEM	26990	46213	47315	50776	39042	43869	39363	37894
43A	ADV WEAPONRY TECH DEMO	6469	16956	0	0	0	0	0	0
L94	ELECTRIC GUN SYS DEMO	18846	19210	18612	14721	17118	19985	24703	32203
L96	HIGH ENERGY LASER TECHNOLOGY DEMO	0	958	8000	14115	19852	25649	25001	27630
L97	SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY	0	0	1000	1020	1021	1021	1021	1021

A. Mission Description and Budget Item Justification: This Program Element (PE) matures and demonstrates advanced weapons and munitions technologies to increase battlefield lethality and survivability for the Future Combat Systems (FCS), the Future Force and, where possible, the Current Force. The general goal of this program is to provide the warfighter with weapons and munitions that provide equivalent or greater lethality (or other desired effects) when compared to current weapon systems - at greater ranges, with greater precision, in lighter weight systems and at affordable costs. Project 232 funds the munitions development efforts associated with the FCS 120mm Line Of Sight (LOS)/Beyond Line Of Sight (BLOS) System Advanced Technology Demonstration (ATD), which is completing in FY05 and will provide the main armament, a lightweight cannon and associated ammunition for the FCS Mounted Combat System (MCS). Although this ATD focused on developing a 120mm solution, the technologies and designs being pursued are applicable to either a 120mm or 105mm lightweight gun system, whichever becomes the final MCS design. Project 232 also funds Mid Range Munition (MRM), which is the round that will enable the MCS to have an extended range (BLOS) capability; MCS Ammunition System Technologies (MAST), which will provide enhanced capabilities beyond the baseline LOS/BLOS armament and munition suite; Objective Non-Line Of Sight (NLOS) Mortar Technology, which will demonstrate a 120mm breech loaded recoiling mortar for under armor application; Common Smart Submunition, which will develop and demonstrate component technologies for a next generation precision kill and target-discriminating submunition that can be used in a variety of delivery systems; and Non-Lethal Payloads for Personnel Suppression and Vehicle Area Denial, which will design and demonstrate the munitions to surpress activity or deny access to designated areas. Project 43A funds Congressional special interest items. Project L94 matures enabling technologies for an Electromagnetic (EM) Gun armament system that will lead to demonstrations of the key sub-systems in FY06. Based on successful completion of the component technologies, the Army will begin an ATD in FY07 for the design, fabrication and test of a full-scale, medium caliber EM armament demonstrator with robust LOS capability. EM Gun has the potential to revolutionize the future battlefield by its unique performance characteristics, including hypervelocity lethality effects and greatly reduced logistics burden. In FY06 a new project, L96, will be initiated with the goal of maturing and demonstrating a high energy solid-state laser weapon. In FY05 funding for a new project, L97, was realigned from PE 0602622A to mature and demonstrate smoke and obscurant technologies with the potential to enhance personnel and platform survivability. Work in projects 232, 43A and L94 is related to, and fully coordinated with, efforts in PE 0602624A (Weapons and Munitions Technology), PE 0602618A (Ballistics Techology), PE 0604802A (Weapons and Munitions - Engineering Development), and PE 0602307A (Advanced Weapons Technology).

Work in this PE associated with Project L96 is related to, and fully coordinated with, efforts in PE 0605605A (DOD High Energy Laser Systems Test Facility), and starting in FY03 PE 0603305A/TR3 (Army Missile Defense Systems Integration/Mobile Tactical High Energy Laser), PE 0603005A/441 (Pulse Power for FCS), and to PE 0602307/042 (High Energy Laser Technology). Work in this PE associated with project L97 is related to and fully coordinated with, efforts in PE 0602622A Project A552 (Smoke/Novel Obscurant Munitions). The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan and the Defense Technology Area Plan (DTAP).

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	67622	74572	61701
Current Budget (FY 2006/2007 PB)	83337	74927	80632
Total Adjustments	15715	355	18931
Net of Program/Database Changes			
Congressional Program Reductions	-1548		
Congressional Rescissions			
Congressional Increases	19550		
Reprogrammings			
SBIR/STTR Transfer	-2287		
Adjustments to Budget Years		355	18931

Change Summary Explanation:
FY07 - Increased Funding ($18391) supports Electric Gun System Demonstrations and Mid Range Munitions (MRM) development.

Nine FY05 Congressional adds totaling $19550 were added to this PE.

FY05 Congressional Adds with no R-2A:
($2018) Compressor Blades Wear-Resistant Ceramic Coating, Project 43A: The purpose of this one year Congressional add is to fund research on a wear-resistant ceramic coating for compressor blades. No additional funding is required to complete this project.

($1346) Development Mission Integration, Project 43A: The purpose of this one year Congressional add is to provide demonstrations of integrated armament technologies for armament systems to include integration activities on surrogate ground/air platforms. No additional funding is required to complete this project.

($2355) Main Rotor and Anti-Torque Blade Erosion Resistant Ceramic Coating, Project 43A. The purpose of this one year Congressional add is to fund research on erosion resistant ceramic coatings for rotors. No additional funding is required to complete this project.

($960) Micro-Electromechanical System (MEMS) Reliability Assessment Program, Project 43A: The purpose of this one year Congressional add is to assess the reliability of MEMS devices. No additional funds are required to complete this project.

($5383) Rapid Prototyping for Special Projects, Project 43A: The purpose of this one year Congressional add is to fund research in rapid prototyping for special projects. No additional funding is required to complete this project.

($2114) Technology Demonstration for the Prevention of Material Degradation, Project 43A: The purpose of this one year Congressional add is to demonstrate technologies for the prevention or minimization of the effects of material degradation on Army materiel. No additional funds are required to complete this project.

($2691) Tungsten Penetrator, Project 43A: The purpose of this one year Congressional add is to fund research on a tungsten penetrator. No additional funding is required to complete this project.

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
3 - Advanced technology development	**0603004A - Weapons and Munitions Advanced Technology**	**232**

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
232	ADVANCED MUNITIONS DEM	26990	46213	47315	50776	39042	43869	39363	37894

A. Mission Description and Budget Item Justification: This project matures and demonstrates munitions enhancements and emerging technologies in lightweight structures, smart materials, acoustic/seismic sensors and in-flight update architectures. A major effort in this project is the FCS 120mm LOS/BLOS System ATD completing in FY05, which matures and demonstrates a lightweight cannon system with advanced recoil mechanism and lightweight materials to enhance range performance while driving down the overall system weight of the FCS Increment I Mounted Combat System (MCS). Although the ATD is focused on developing a 120mm solution, the technologies pursued are applicable to either a 120mm or 105mm lightweight gun system, whichever becomes the final MCS design. The Mid Range Munition (MRM), a gun launched precision munition for the MCS capable of defeating high-value heavy armor and other targets out to 8+km (i.e., for BLOS capability), is matured and demonstrated under the ATD and a MRM effort in FY06 and FY07. The MCS Ammunition System Technologies (MAST) effort will mature technologies to enhance the capabilities of the FCS armament system and munition suite for FCS spiral insertion or MCS upgrade. This project also funds Objective Non-Line Of Sight (NLOS) Mortar Technology, which will provide a 120mm breech loaded mortar (NLOS-M) with a design optimized for lightweight and thermal balance; Lightweight Dismounted Mortar Weapon, which is a man-transportable 81mm mortar fabricated from lightweight advanced materials and structures; Common Smart Submunition (CSS), which will pursue critical subsystem evaluations leading to final system demonstrations and offer increased operational efficiency through multiple kills per munition, afford greater flexibility for carrier applications, and enable utilization of a variety of delivery systems; Non Line of Sight Cannon (NLOS–C) Non Lethal Personnel Suppression, which will enable personnel suppression at BLOS ranges. . Rheostatic Pulsed Energy Weapons System (RPEWS) will demonstrate a DE weapon system exploiting advances in pulsed power supplies. This project also funds Active Protection System (APS) Launchers and Countermeasures for Lightweight Platforms, which will develop munitions and countermeasures for APSs on lightly armored, or very lightweight vehicles. The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan and the Defense Technology Area Plan (DTAP). This work is performed by the US Army Armament Research, Development and Engineering Center (ARDEC), Picatinny, NJ, and the Army Research Laboratory (ARL), Aberdeen Proving Ground, MD.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
FCS 120mm LOS/BLOS System ATD: In FY04, successfully demonstrated two contractors' prototype MRM projectiles in an autonomous mode, BLOS guide-to-hit test, conducted at ambient temperature, to sense, maneuver and hit a target at 5km; conducted secondary armament turreted slew system demonstration and firing demonstration; completed firing demonstration of lightweight 120mm cannon with muzzle brake, blast deflector, and all turret interfaces required for integration into the FCS MCS turret. In FY05, complete design of integrated dual mode seeker for MRM; conduct multi-mode software development (target acquisition, seeker hand-off, tracking); perform Software-in-the-Loop, and Processor-in-the-Loop performance testing; fabricate components and assemblies and conduct high-g survivability testing; and fabricate prototype integrated dual mode seekers and conduct seeker performance testing (Tower/Captive Flight Test). In FY05 this technology will transition to PM Maneuver Armament Systems for System Development and Demonstration.	22940	16700	0	0
Mid Range Munition (MRM): In FY06, will conduct seeker performance testing (captive flight test and tower test) and procure components; will fabricate, assemble and demonstrate a gun-fired, designated-mode guided engagement vs. a BLOS target; will optimize software to improve tactical capabilities and conduct processor-in-the-loop and hardware-in-the-loop simulations for integrated dual mode seeker. In FY07, will procure components, fabricate and assemble prototypes, and complete a gun-fired, multi-mode BLOS demonstration with tactical performance capabilities.	0	0	10000	10000

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
MAST: In FY05, complete fabrication, assembly and conduct subsystem air frame and warhead testing of Line Of Sight-Multi Purpose (LOS-MP) munition; integrate warhead and fuzing subsystems into airframe and demonstrate LOS-MP air burst capability for anti-personnel and effectiveness of penetrator and fuzing against concrete wall targets at government proving grounds; mature design, fabricate and conduct initial airframe testing at ambient temperature of Enhanced Kinetic Energy (KE) round. In FY06, will fabricate, assemble and conduct initial accuracy improvement testing for Enhanced KE; will demonstrate fracture resistant novel penetrator; procure material, complete fabrication and assembly and conduct testing of advanced propellant to determine hot performance characteristics across temperatures and of igniters for advanced propulsion systems. In FY07, will complete fabrication, assembly and demonstration of in-flight dynamic retargeting and Counter Active Protection Systems (APS) capability for Enhanced MRM; will complete fabrication, assembly and demonstration of integrated Enhanced KE in-flight performance and armor defeat capabilities; and will complete procurement, fabrication, assembly and demonstration of integrated advanced propulsion capability with temperature compensation and precision ignition.	0	13045	21855	22393
Objective Non-Line of Sight (NLOS) Mortar Technology: In FY04, built and assembled the breech loaded mortar and began single shot firing. In FY05, conduct live fire tests to demonstrate rates of fire commensurate with threshold requirements.	2300	2000	0	0
Lightweight Dismounted Mortar Weapon: In FY05, conduct lightweight material engineering evaluations, fabricate components for mechanical assessment and testballistic performance of a full-scale, lightweight barrel prototype. In FY06, will develop, test and ballistically demonstrate a full-scale system prototype of a steel tube with lightweight components.	0	3500	1960	0
Common Smart Submunition: In FY05, conduct tower tests to verify and validate performance metrics for detection, discrimination and classification of potential targets in benign and counter measured scenarios. In FY06, will conduct captive flight tests with advanced sensor and algorithm to achieve probability of discriminating of 0.90 and firing at a target of interest; will optimize and evaluate multiple effects warhead for both light and heavy targets; will conduct soft recovery vehicle tests of electronics assembly and warhead liner for survivability in high-g envrironment. In FY07, will mature sensor and algorithms for follow-on captive flight tests to achieve probability of discriminating and firing at a target of interest of 0.95; will conduct warhead performance and lethality tests; provide test data for system analysis model; and will develop a CSS system model for simulation and wargaming evaluation.	0	2207	6000	9000

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
Non Line of Sight Cannon (NLOS–C) Non Lethal Personnel Suppression: In FY05, conduct non-lethal payload effectiveness and dispersion analysis; refine design based on analysis; conduct initial gun launch and payload dispense test. In FY06, will demonstrate kinetic energy mitigation of payload module, and will complete target effects analysis and conduct max range system flight test demonstration.	0	4000	4000	0
Special Weapons Observation Reconnaissance Detection System (SWORDS) /Joint Manned-Unmanned System Teaming (JMUST): In FY05, will conduct testing to verify hardware and software modifications for safety certification.	0	490	0	0
Active Protection System (APS) Launchers and Countermeasures for Lightweight Platforms: In FY05, conduct warhead optimization to defeat Kinetic Energy penetrators; conduct spinning brass board sensor test; conduct dynamic warhead arena test; fabricate demonstration munition hardware. In FY06, complete integration / fabrication of demonstration munition; will conduct end-to-end dynamic flight demonstration against KE penetrator and HEAT round. In FY07, conduct warhead optimization to increase lethality and range of intercept; will conduct lightweight launcher development.	0	2021	2000	2000
Enabling Fuze Components for Advanced Munitions: In FY06, will begin explosive safety testing of Micro-Electro Mechanical Systems (MEMS) Safe and Arm (S&A) components and multipoint Electronic Safe & Arm Device (ESAD) components; evaluate performance of proximity and safety sensors in limited/simulated environmental and flight tests. In FY07, will continue explosive compatibility and safety tests of MEMs S&A's and ESADs; test proximity and safety sensors in simulated and actual flight environments.	0	0	1000	2300
Networked Sensors for the Future Force ATD: In FY04, demonstrated advanced ground target classifier and target counting algorithm in a real-time system; integrated suite of OGA developed acoustic/seismic sensors. In FY05, integrate and demonstrate the new, low cost, distributed and networked unattended ground sensor systems to evaluate capability of providing faster target identification and reaction time with reduced false alarms.	1000	1000	0	0
Common/Modular Power Sources: In FY07, will demonstrate prototype designs in laboratory and conduct air-gun tests for new thermal and liquid reserve batteries and hybrid power systems; will conduct field tests for new thermal batteries and alternative/hybrid energy systems.	0	0	0	2283
Fire Control-Node Engagement Technology: In FY04, optimized algorithms and architecture to support demonstration in a simulated environment and initiated transition of Network effects to Future Force Warrior (FFW). In FY05, will provide full functional Networked Effects Software configured for insertion into FFW ATD architecture to support a capstone demonstration.	750	750	0	0

Accomplishments/Planned Program (continued)	FY 2004	FY 2005	FY 2006	FY 2007
Rheostatic Pulsed Energy Weapons System: In FY07, will integrate DE power source technologies onto a ruggedized skid to demonstrate and assess the feasibility of further maturing and developing this technology.	0	0	0	2000
Structural Energetics: In FY05, conduct test trials in simulated tactical environment with high strength polymer-based energetic matrix formulations with graphite-reinforcement. In FY06, will conduct tests with energetic composites integrating pyrophoric reinforcements. In FY07, will conduct system demo of munition fabricated with structural energetic components.	0	500	500	800
Totals	26990	46213	47315	50776

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3 - Advanced technology development	**0603004A - Weapons and Munitions Advanced Technology**	**L94**

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
L94	ELECTRIC GUN SYS DEMO	18846	19210	18612	14721	17118	19985	24703	32203

A. Mission Description and Budget Item Justification: This project matures and demonstrates electromagnetic (EM) armament sub-systems and/or enabling technologies. EM guns have the potential to revolutionize the future battlefield by their unique performance characteristics (such as hypervelocity and reduced-signature launch), potential for elimination of vulnerable propellants, synergistic relationship with hybrid electric vehicles, and potential for significant reduction in sustainment burden. The project will provide a comprehensive mission area analysis/utility assessment and will resolve system level technology challenges including synchronization/compatibility of twin rotating machines, technology scalability, thermal management, and full-energy system performance. After successful demonstration of the critical components/subsystems at tactical scale, an Advanced Technology Demonstration (ATD) will be conducted to integrate next generation sub-systems into a stand-alone medium caliber armament prototype (complete with prime power, cooling and auxiliaries) and demonstrate system performance. A collaborative program has been established with the Navy and DARPA for EM gun work by the formulation and signing of a formal Memorandum of Agreement. The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan and the Defense Technology Area Plan (DTAP). This project is executed by ARDEC, Picatinny, NJ, in cooperation with the Army Research Laboratory (ARL), Adelphi, MD and The University of Texas at Austin (University Affiliated Research Center) and coordinated with their respective Program Elements: 0602618 Project AH75 and 0601104 AH56.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
EM Gun System Demo: In FY04, prepared performance specifications and point-of-departure data for the design, simulation, build and test of the Pulsed Power Supply (PPS); generated fuzed, high-explosive warhead package concepts and refined novel penetrator designs for EM gun launch testing; conducted comparative analysis of bore wear and erosion mechanisms in fired railgun surfaces versus those of propellant driven launchers; awarded pulse power subsystem contracts. In FY05, perform critical material/component evaluations including tests on composite alternator and barrel structures, low-density and high-strength metals, electrical insulation and thermal management systems, high performance solid state switches; build and test subscale launchers to begin characterizing barrel life and Integrated Launch Packages to include both kinetic energy and high-explosive projectiles; fabricate components for prototype PPS rotating machines; design PPS torque management system and mount. In FY06, will complete fabrication of a fully cantilevered railgun and demonstrate full-scale launch at hypervelocity; will perform full caliber tests with both unguided multipurpose and kinetic energy rounds and demonstrate the launchability of high-explosive and electronics ILPs in an EM armament environment; will conduct verification testing of PPS sub-assemblies and integrate the compact, twin counter-rotating pulsed alternator power supply; will conduct high fidelity breadboard PPS demonstrations to establish requisite performance criteria and subsystem functionality to transition into a proposed follow-on ATD. In FY07, will build upon the test beds to mature next generation EM armament subsystem hardware; will prepare evolutionary designs for an integrated medium caliber, line-of-sight demonstrator platform; and will assess the performance of component/subsystem designs.	18846	18252	18612	14721
Electromagnetic Gun Initiative: This one year Congressional add provides for the design, fabrication, test and evaluation of an advanced, optically controlled silicon switch for high energy pulsed duty. No additional funding is required to complete this effort.	0	958	0	0
Totals	18846	19210	18612	14721

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L96	HIGH ENERGY LASER TECHNOLOGY DEMO	0	958	8000	14115	19852	25649	25001	27630

A. Mission Description and Budget Item Justification: This project matures and demonstrates advanced technologies for Future Force High Energy Laser (HEL) weapons technology, and, where feasible, exploits opportunities to enhance Current Force capabilities. The major effort under this project is the development of a mobile one-hundred kilowatt (kW) class Solid State Laser (SSL) weapon demonstrator that complies to the form, fit, and function requirements of the Future Combat Systems (FCS). HEL systems have the potential to address the following identified Army capability gaps: 1) Defeat In-Flight Projectiles such as rockets, artillery, mortars, anti-tank guided missiles, rocket propelled grenades, and man-portable surface-to-air missiles; 2) Ultra-Precision Strike with little to no collateral damage; 3) Disruption of Electro-Optical (EO) and Infra-Red (IR) sensors; and 4) Neutralizing mines and other ordnance (especially improvised explosive devices (IEDs)) from a stand-off distance. HELs are expected to complement conventional offensive and defensive weapons at a lower cost-per-shot than current systems. At weapon system power levels of greater than 100kW, SSL technology has the potential to enhance Future Combat Systems (FCS) survivability by addressing the capability gaps identified above. This SSL technology effort addresses technical issues such as high average power output from compact and more efficient lasers; precision optical pointing and tracking; laser effects degradation due to atmospheric effects; lethality against a variety of targets; and effectiveness against low-cost laser countermeasures. The program will use the appropriate power laser based on knowledge gained from the 100kW SSL laboratory device developed in PE 0602307A and demonstrated in FY08. Work in this project is related to, and fully coordinated with, efforts in PE 0602890 D8Z and PE 0603924D8Z (High Energy Laser Joint Technology Office), PE 0605605A (DOD High Energy Laser Systems Test Facility), PE 0603305A/TR3 (Army Missile Defense Systems Integration/Mobile Tactical High Energy Laser), and PE 0603005A/441 (Combat Vehicle and Automotive Advanced Technology). The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP). Work is performed by the US Army Space and Missile Defense Command (SMDC), in Huntsville, AL and the Army Test and Engineering Center, White Sands Missile Range, NM.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Solid State Laser (SSL) Weapons System Demonstrator: In FY06, will initiate trade studies and detailed System Engineering Designs with the Joint High Power Solid State Laser Phase II contractors for a SSL weapon system compatible with tactical ground vehicle requirements. In FY07, will assess the capabilities of the existing Air Defense target acquisition and C3I capabilities to meet the DEW specifications. Will identify and initiate required modification of these Air Defense systems and procure long lead items for 100kW laser weapon system development.	0	0	8000	14115
Future Laser Neutralization System (LNS)-- This one year Congressional Add funds the development of enhanced laser and beam control technology for future laser neutralization systems on such targets as mines, unexploded ordnance, improvised explosive devices (IED's) and their control mechanisms. No additional funds are required to complete this effort.	0	958	0	0
Totals	0	958	8000	14115

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COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
L97	SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY	0	0	1000	1020	1021	1021	1021	1021

A. Mission Description and Budget Item Justification: This project matures and demonstrates smoke and obscurant technologies with potential to enhance personnel/platform survivability by degrading threat force surveillance sensors and defeating the enemy's target acquisition devices, missile guidance, and directed energy weapons. Dissemination systems for new and improved obscurants are developed with the goal of providing efficient and safe screening of deployed forces. A major effort will demonstrate the dissemination of newly developed advanced IR obscurants having 4 times the previous performance. Modeling and simulation tools developed in PE 0602622A will be matured to predict performance and analyze strategic use of obscurants on the battlefield. Other efforts mature dissemination, delivery, and vehicle protection technology obscurant enabling technology with potential to increase survivability through increased standoff and threat protection. After successful demonstration, these technologies transition to the Family of Tactical Obscuration Devices and other System Development and Demonstration programs. Funding in this project was realigned from PE06022622A project A552 to establish an advanced technology development line for technology maturation. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Area Plan (DTAP). Work in this project is performed by the Army Research, Development and Engineering Command, Edgewood Chemical Biological Center, Edgewood, MD.

Accomplishments/Planned Program	FY 2004	FY 2005	FY 2006	FY 2007
Obscurant Enabling technologies In FY06, will mature concepts for prototype systems for use in grenades, artillery rounds, and other smoke generating systems; will identify techniques for field evaluation of prototype dissemination systems. In FY07, will refine design of prototype packaging/dissemination concepts; develop prototype system for advanced IR obscurant. Will refine modeling and verify modeling parameters. Will conduct experiments of new dissemination in a relevant environment.	0	0	1000	1020
Totals	0	0	1000	1020